



# Sustainable Livestock Management Practices Among Herders in Western Niger Delta Region: Impact on Health, Productivity and Community Wellbeing

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## Abstract

This study addresses a current research gap in Computer Science concerning Sustainable Livestock Management Practices Among Herders of Western Niger Delta Region: Impact Assessment on Animal Health, Productivity and Community Wellbeing in Niger. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured review of relevant literature was conducted, with thematic synthesis of key findings. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Sustainable Livestock Management Practices Among Herders of Western Niger Delta Region: Impact Assessment on Animal Health, Productivity and Community Wellbeing, Niger, Africa, Computer Science, systematic review This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Model estimation used  $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n (y_i - f(\theta(\xi)))^2 + \lambda \|\theta\|_2^2 \}$ , with performance evaluated using out-of-sample error.

**Keywords:** *Sub-Saharan, pastoralism, GIS, livestock modelling, sustainability assessment*

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